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Chitinolytic complex of serratia marcescens and peculiarities of its biosynthesis

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Abstract

The extracellular chitinolytic complex of Serratia marcescens Bú 211 ATCC 9986 was shown to include three proteins with molecular masses of 58, 52, and 45 kDa (chitinases A, B, and C, respectively). Chitinases A and B were separated from chitinase C and purified from protein admixtures by chromatography on chitin. Chitinase A possessed two isoforms with pI values of 6.25 and 4.85-5.25. Chitinase B had only one isoform with a pI of 4.85-5.25 and appeared to be an endochitinase. In the absence of chitin, the biosynthesis of extracellular chitinases was induced by mitomycin C (MC), an inducer of the SOS-response in cells. In the presence of chitin in the cultivation medium, MC increased the chitinase activity. MC induced the synthesis of all three extracellular chitinases, but not of chitobiase, whose biosynthesis was induced by the substrate.

Keywords

Chitinase, Chitobiase, Induction, Mitomycin C, Serratia marcescens